ELECTRICALLY WELDED • AND TRIANGLE MESH

WIRE FABRIC REINFORCEMENT

AMERICAN STEEL & WIRE COMPANY

UNITED STATES STEEL

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AMERICAN STEEL & WIRE COMPANY

UNITED STATES STEEL

*Columbia Steel Company, *Pacific Coast Distributors*
United States Steel Products Company, 30 Church Street, New York, *Export Distributors*

USS TRIANGLE MESH & ELECTRICALLY WELDED WIRE FABRIC REINFORCEMENT

For many classes of work USS Wire Fabric Reinforcement manufactured by the AMERICAN STEEL & WIRE COMPANY is more efficient and more economical than other types of reinforcing steel.

Wire is a product resulting from drawing a hot rolled rod through a die which mechanically reduces the size and increases the length. The yield point and the ultimate strength is increased 50 to 100 per cent depending upon the amount of drawing or reduction. The finished wire is then partially annealed to reduce the stiffness, thereby making a fabric of high yield point and tensile strength that is still sufficiently flexible to insure ease in handling.

The yield point of the wire is at least 50 per cent greater than the yield point of the original hot rolled rod; therefore, based on strength of the steel alone, wire fabric is more efficient by 50 per cent than the hot rolled rod of equivalent area.

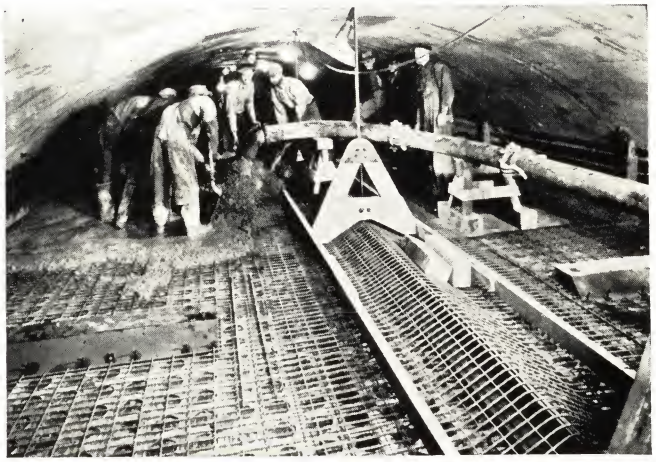
The bonding area of wire fabric because of its smaller members closely spaced is several times greater than that for a large steel member of an equal cross sectional area. This can be shown by the simple example of comparing the bond area or surface of four ½-inch square bars with that for one 1-inch square bar which has a sectional area equal to the four ½-inch bars. The four ½-inch bars have a total bonding surface of twice that for the 1-inch bar. Comparing sixteen ¼-inch square bars with one 1-inch bar shows the total bonding surface to be four times that for the 1-inch bar.

This explains in part why better results are obtained with a wire fabric having small members closely spaced than with reinforcement of equal area having larger members spaced further apart.

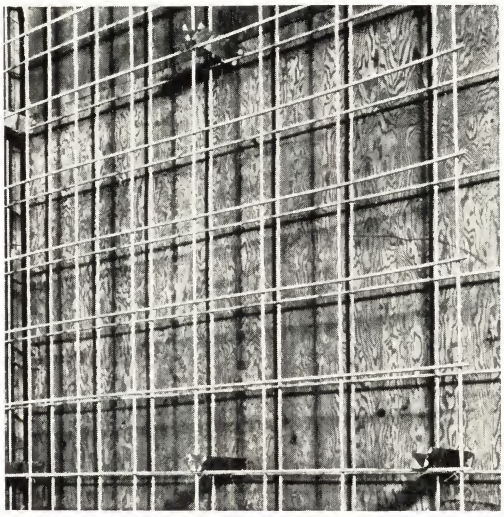
When comparing costs of wire fabric for any particular job, the comparison is not complete unless the costs to install are included. For the average floor job wire fabric can be installed in the forms at a cost of about 20 to 30 per cent less than other types of unfabricated reinforcing steel.

Uses

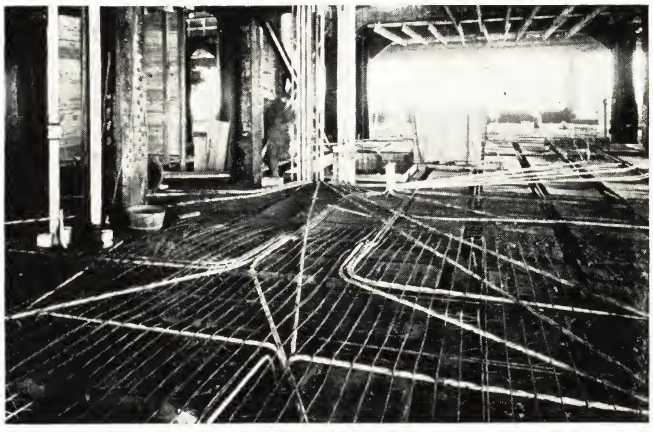
USS Triangle Mesh and Electrically Welded Wire Fabric are used for the reinforcing of concrete floor and roof slabs, concrete walls and chimneys, arch construction, beams, columns, dams and retaining walls, water, sewer and culvert pipe, pavements and roadways, river revetment, silos, fireproofing steel framing, bridge floors, reservoirs, monolithic concrete sewers and stucco work.



Welded Wire Fabric Used in Mid-Hudson Tunnel, New York, N. Y. Pouring the Ceiling Slab



Welded Wire Fabric Used in 8-inch Concrete Walls, Chicago Post Office, Chicago, Ill.



Triangle Mesh Reinforcement, Pan and Joist Construction, Tribune Tower, Chicago, Ill.

Advantages of Wire Fabric Reinforcement

(1) Provides even distribution of steel.

(2) Reinforces in every direction.

(3) Tension or carrying members accurately spaced.

(4) Low cost inspection.

(5) Properly distributes over a large area stresses due to concentrated load.

(6) Due to cold drawing, higher elastic limits with same quality of steel.

(7) Continuous action from one end of the structure to the other.

(8) Impossible to leave out or otherwise reduce the necessary steel if specific style number of fabric or area of steel is specified.

(9) Perfect mechanical bond.

(10) Easily handled and stored on the job.

(11) Minimum cost of installation.

(12) More bond area provided for equivalent steel area because of its small members closely spaced.

Grade of Steel

A reduction of the required sectional area of steel is safely accomplished, within limits, by the use of a higher yield point steel. This higher yield point may be secured by increasing the carbon content or by cold drawing of mild steel.

Cold drawing of mild steel produces a high ultimate strength and increases the yield point from 60% of the ultimate strength to approximately 90% of the ultimate strength. Since the strength of a reinforced concrete structure, in so far as the reinforcement is concerned, depends on the yield point and mechanical bond of the steel, the high yield point and increased bond area of cold drawn wire fabric is of great importance. A working stress of 30,000 lbs. per sq. in. is recommended where permitted by building codes.

Floor Construction Beam and Slab Type

Beam and Slab or short span type of floor construction with reinforced concrete slabs supported by reinforced concrete beams or steel beams is used extensively for office, hotel, apartment and factory building construction. The length of spans depends upon the column spacing. Usually three spans per column is most economical. The spans in this case usually would not exceed 8 ft. For spans up to 8 ft. in length the present New York City building code which has been in effect since 1916 states:

> Article 17, Section 354, paragraph 4-e: "Strength of concrete slabs. In determining the safe carrying capacity of concrete slab floor fillings the gross load in pounds per square foot of floor surface shall not exceed the product of the depth in inches of the reinforcement below the top of the slab, by the cross-sectional area in square inches per foot of width of the tensional steel, divided by the square of the span in feet, all multiplied by the following co-efficients when cinder concrete is used: 14,000 if the reinforcement is not continuous over the supports, 18,000 if the reinforcement consists of rods or shapes securely hooked over or attached to the supports, and 26,000 if the reinforcement consists of steel fabric continuous over the supports, and, when stone concrete is used, 16,000, 20,000 and 30,000, respectively."
>
> (Note:—This rule applies for spans 8 feet or less).

Short Span Cinder Concrete Floor Construction, Welded Wire Fabric as Used in Empire State Building, New York, N. Y.

The proposed Building Regulation for Reinforced Concrete, Report of American Concrete Institute Committee 501 Standard Building Code adopted as a tentative Standard February 27, 1936, recommends as a tensile working stress in wire mesh, Sec. 306 under allowable unit stresses in Reinforcement, "Wire Mesh . . . . fifty per cent of the minimum yield point as established by A.S.T.M. Standards . . . not to exceed 30,000 lbs. per square inch," and in Section 505—Placing Reinforcement.

> Paragraph (b) "When wire . . . . . is used as reinforcement for slabs not exceeding ten feet in span, the reinforcement may be carried from a point near the top of the slab over the support to a point near the bottom of the slab at mid span; providing such reinforcement is either continuous over or securely anchored to the support."

Supporting Wire Fabric Reinforcement Over Beams

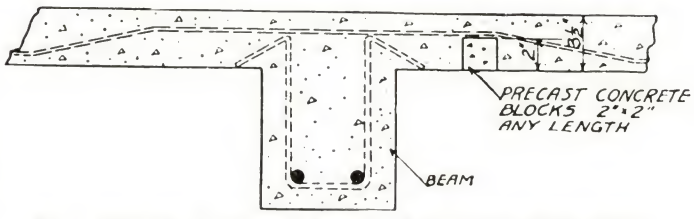


Fig. 1, Showing Inexpensive Method of Supporting Wire Fabric Reinforcement Over Concrete Beams

When structural steel beams are used with concrete slabs the top of the beam usually acts as a support for the fabric. However, when further support is required or when the beams are of concrete, precast concrete blocks as shown in figure 1 are often used.

These blocks should have a height about 1¼ or 1½ inches less than the full thickness of the slab. The length may be any convenient amount such as one or two feet or such lengths as readily formed by breaking long strips of the blocks. The wire fabric should be supported for at least one third of its width. These blocks will stay in approximately correct position without any means of attachment to the reinforcing fabric or to the forms.

For short spans (about 8 feet or less) these blocks will be required on only one side of the beams. For spans greater than 8 feet use blocks on both sides.

Comparative Cost of Wire Fabric and Bars

Usually wire fabric is the most economical reinforcement to use for areas of steel per foot of width of .50 sq. in. or less. Any design requiring a greater area of steel per foot of width is usually more economical for a bar design.

Detailing Widths of Wire Fabric

For estimating purposes where accuracy is unnecessary provided the estimate is on the safe side, it is permissible to assume that the wire fabric required will equal in square feet the actual area of the floor slab. A two-inch lap along the sides of the sheets of wire fabric is sufficient to develop the full strength of the reinforcement; more than that is a waste of material. This two-inch lap means a lap of the outside (or selvage) longitudinal wires as shown in Figures 3 and 4. The cross wires that extend beyond the longitudinals are not counted in as part of the lap.

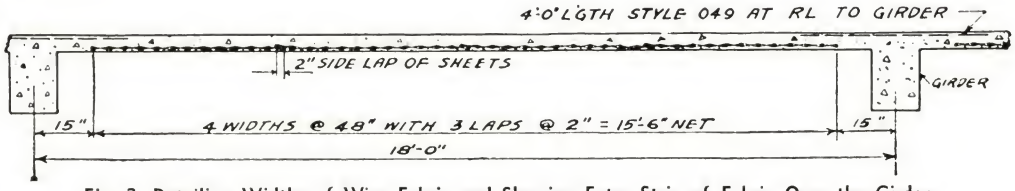


Fig. 2, Detailing Widths of Wire Fabric and Showing Extra Strip of Fabric Over the Girder

A suggested detail for the amount and location of wire fabric reinforcement is shown in Figure 2. Providing a short strip of light weight fabric is placed near the top of the slab over the girders with the main longitudinal wires at right angles to the direction of the girders; it is not only unnecessary but a waste of material to require that the main reinforcement of the slabs entirely cover the space between and over the girders.

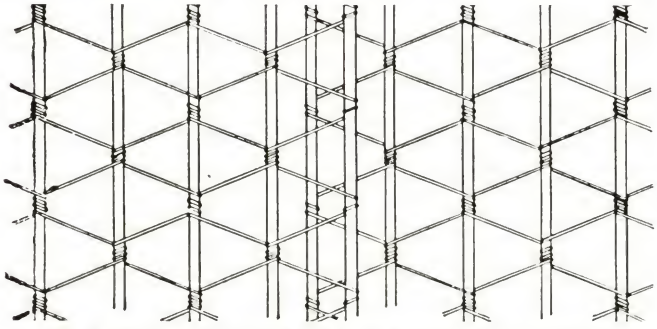


Fig. 3, Showing Triangle Mesh as it Actually Appears with a Side Lap of 2 Inches

The distance between the center line of the girder and the edge of the reinforcing fabric can be any amount up to 20 inches without reducing the strength of the structure. In the case where the girder is a reinforced concrete beam the strip of fabric placed over the beam or girder is usually designed to carry the load on the portion of the slab assumed as the flange of the T-beam.

Concrete Joist Floors

For long spans and light loads a floor construction consisting of closely spaced concrete ribs and connecting concrete slabs will very often prove to be economical. Figure 5 shows a typical section of such a floor. Here is a 2 inch or 3 inch slab having a clear span between the supporting ribs of approximately 23 inches that must not only act as part of the compression portion of the beams and resist temperature stresses but in addition act as support to the loads that may come upon the floor. The most efficient type of reinforcement to take care of these various stresses is a wire fabric. At first these thin top slabs were built without any reinforcement. Such a construction invites disaster. The next step in the development of this type of floor consisted of adding small wire rods placed at right angles to the ribs and spaced from 12 to 24 inches apart. Such a method possibly takes care of the temperature stresses, but does not definitely insure the T-beam action assumed in the design and cannot possibly be considered as an efficient reinforcement to carry the live loads coming upon the floor. A thin slab approximately two feet square is left without any reinforcement. A wire fabric with comparatively close spacing of members is the only logical reinforcement to use.

The Proposed Building Regulation for Reinforced

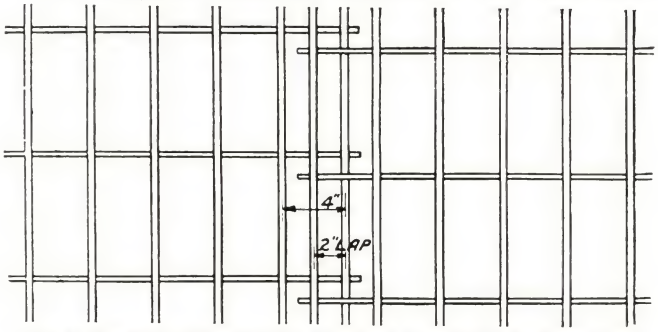


Fig. 4, Showing Welded Wire Fabric as it Actually Appears with a Side Lap of 2 Inches

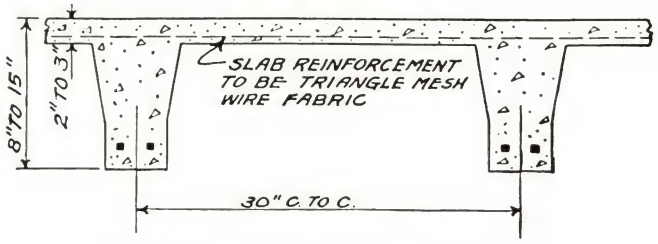


Fig. 5. Typical Section of Concrete Joist Floors

Concrete, Report of American Concrete Institute Committee 501 Standard Building Code adopted as a tentative Standard February 27, 1936, recommends Section 708 Shrinkage & Temperature Reinforcement (a) Reinforcement for shrinkage and temperature stresses normal to the principal reinforcement shall be provided in floor and roof slabs where the principal reinforcement extends in one direction only. Such reinforcement shall provide for the following minimum ratios of reinforcement area to concrete area but in no case shall such reinforcing bars be placed farther apart than five times the slab thickness nor more than 18 inches.

Floor slabs where Plain Bars are used	0.0025
Floor slabs where Deformed Bars are used	0.002
Floor slabs where Wire Fabric is used having welded intersections not farther apart in the direction of stress than 12 inches	0.0018
Roof slabs where Plain Bars are used	0.003
Roof slabs where Deformed Bars are used	0.0025
Roof slabs where Wire Fabric is used having welded intersections not farther apart in the direction of stress than 12 inches	0.0022

Wire Fabric Reinforcement for all classes of Cement Gun Work

Guniting Operation on Outer Drive Bridge, Chicago, Ill.

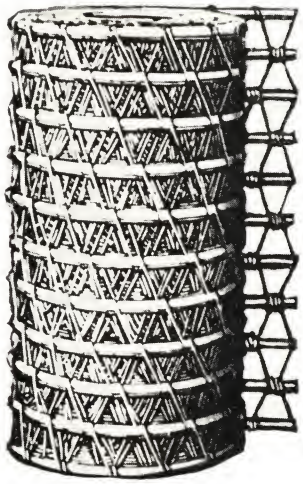
Guniting a Reservoir Using Welded Wire Fabric Reinforcement

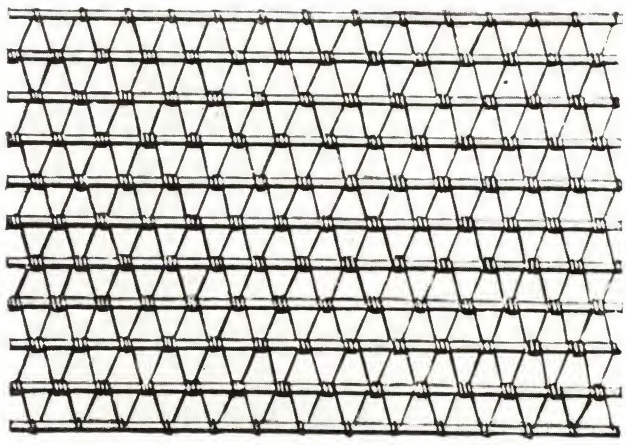
Gunite (trade name) is concrete applied by the Cement-gun process which produces a dense and waterproof concrete. Although Gunite has high tensile and compressive strengths, it still requires proper reinforcement to prevent cracks or in other words to produce a structurally strong finished product. Experience has taught the various Cement-gun companies that close-meshed wire fabric is the most efficient and economical form of reinforcement to use for this purpose.

Gunite reinforced with Triangle Mesh or Electric Welded Reinforcement has repaired successfully old crumbling bridge piers, tunnel linings and sea walls; old steel bridges, tanks and trusses; leaky reservoirs and irrigation ditches; even wooden structures that have been damaged by fire have been restored to usefulness by this method. And repair work is by no means the most important class of work produced. All kinds of new construction, especially those requiring waterproof qualities with light resulting weight can be successfully executed.

A 2-inch mesh (2-inch spacing cross wires known as "A" Styles) when Triangle Mesh is used or a 2x2-in. or a 3x3-in. welded wire fabric is made for use with the Cement-gun or similar work.

Description of Triangle Mesh Reinforcement





USS Triangle Mesh Woven Wire Reinforcement is made from cold drawn mild steel having a high breaking strength, the longitudinal or tension members are spaced 4 in. the diagonal cross wires either 2, 4 or 8 in.

For the light styles of fabric the longitudinals consist of one wire, for the medium styles two wires and for the heavy styles three wires stranded. The size of the wires is varied to obtain the desired cross sectional area of steel per foot of width. The reason for using stranded longitudinals for the heavy fabric is to reduce the stiffness of the finished product without affecting the tensile strength.

Triangle Mesh Reinforcement is regularly made in standard rolls but can be furnished straightened and cut to lengths when required. Generally, rolls can be more easily handled and installed.

Standard Styles USS Triangle Mesh Reinforcement

TABLE NO. 1
Longitudinals Spaced 4 Ins. Cross Wires Number 14 Gauge Spaced 4 Ins. Number and Gauge of Wires, Areas per Foot Width and Weights per 100 Sq. Ft.

Style Number	Number and gauge of Wires each longitudinal American Steel & Wire Company's steel wire gauge	Sectional area longitudinals square inches per foot width	Total Effective longitudinal sectional area square inches per foot width	Approximate weight lbs. per 100 square feet
032	1—No. 12 gauge	.026	.032	22
040	1—No. 11 gauge	.034	.040	25
049	1—No. 10 gauge	.043	.049	28
058	1—No. 9 gauge	.052	.058	32
068	1—No. 8 gauge	.062	.068	35
080	1—No. 7 gauge	.074	.080	40
093	1—No. 6 gauge	.087	.093	45
107	1—No. 5 gauge	.101	.107	50
126	1—No. 4 gauge	.120	126	57
146	1—No. 3 gauge	.140	.146	65
153	1— ¼ inch	.147	.153	68
168	1—No. 2 gauge	.162	.168	74
180	2—No. 6 gauge	.174	.180	78
208	2—No. 5 gauge	.202	.208	89
245	2—No. 4 gauge	.239	.245	103
267	3—No. 6 gauge	.261	.267	111
287	3—No. 5½ gauge	.281	.287	119
309	3—No. 5 gauge	.303	.309	128
336	3—No. 4½ gauge	.330	.336	138
365	3—No. 4 gauge	.359	.365	149
395	3—No. 3½ gauge	.389	.395	160

TABLE NO. 2
Longitudinals Spaced 4 Ins. Cross Wires Number 14 Gauge Spaced 8 Ins.

036P	1—No. 12 gauge	.026	.036	17
044P	1—No. 11 gauge	.034	.044	20
053P	1—No. 10 gauge	.043	.053	24
062P	1—No. 9 gauge	.052	.062	27
072P	1—No. 8 gauge	.062	.072	31
084P	1—No. 7 gauge	.074	.084	35
097P	1—No. 6 gauge	.087	.097	40

Length of Rolls: 150, 200 and 300 ft.
Widths: Approximately 16, 20, 24, 28, 32, 36, 40, 44, 48, 52 and 56 in.
Ultimate Tensile Strength 70,000 to 85,000 lbs. per sq. in.
Note: Materials may be furnished either plain or galvanized. Unless otherwise specified, shipments will be made of material not galvanized.

TABLE NO. 3
Longitudinals Spaced 4 Ins. Cross Wires Number 12½ Gauge Spaced 8 Ins. Number and Gauge of Wires, Areas per Foot Width and Weights per 100 Sq. Ft.

Style Number	Number and gauge of wires each longitudinal American Steel & Wire Company's steel wire gauge	Effective sectional area of cross reinforcement square ins. per foot width	Effective longitudinal sectional area square inches per foot width	Approximate weight lbs. per 100 square feet
041R	1—No. 12 gauge	.014	.041	21
049R	1—No. 11 gauge	.014	.049	24
058R	1—No. 10 gauge	.014	.058	28
067R	1—No. 9 gauge	.014	.067	31
077R	1—No. 8 gauge	.014	.077	35
089R	1—No. 7 gauge	.014	.089	40
102R	1—No. 6 gauge	.014	.102	44

TABLE NO. 4
This Material Is Used Principally for Cement Gun Work. Longitudinals Spaced 4 Ins. Cross Wires Spaced 2 Ins.

Style Number	Number of wires each long	Gauge of wire each long	Gauge of cross wires	Approximate weight per 100 square feet
7-A	1	12	14	31
6-A	1	10	14	37
5-A	1	8	14	44
4-A	1	6	14	53
29-A	1	12	12½	42
28-A	1	10	12½	48
27-A	1	8	12½	55
26-A	1	6	12½	64

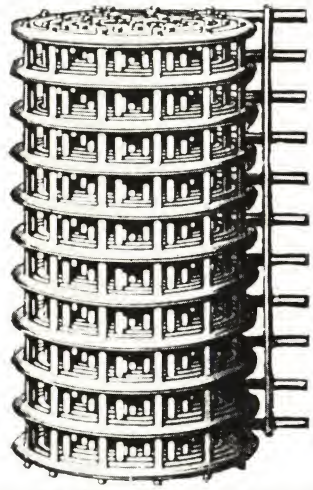
See footnotes under table No. 2.

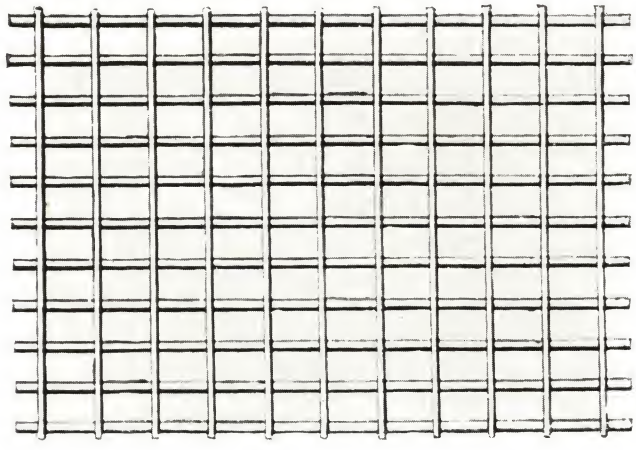
TABLE NO. 5
Areas in Sq. Ft. per Roll of Triangle Mesh Reinforcement

Width of roll inches	Square feet of reinforcement in roll		
	150-foot roll	200-foot roll	300-foot roll
16	200	267	400
20	250	333	500
24	300	400	600
28	350	467	700
32	400	533	800
36	450	600	900
40	500	667	1000
44	550	733	1100
48	600	800	1200
52	650	867	1300
56	700	933	1400

For the Lighter Styles we recommend the use of 200 or 300-ft. rolls. The Heavy Styles are easier to handle in 150-ft. rolls.

Description of Welded Wire Fabric Reinforcement





American Steel & Wire Company USS Welded Wire Fabric is a square or rectangular fabric made from cold drawn steel wire electrically welded at the intersections of the transverse and longitudinal wires. Various combinations of spacings of wires can be furnished but the standard spacings for the longitudinals are 2, 3, 4 or 6 inches and for the transverse wires 6, 8, 12 or 16 inches. See tables for Styles of Welded Wire Fabric usually carried in stock.

The cross or transverse wires extend out one inch beyond the outside or selvage longitudinal wires.

The weights given on the following page are based on a width of fabric measured center to center of the outside longitudinals. Square footage is also based on a width exclusive of the overhang of the cross wires outside of the longitudinals.

It is regularly made in rolls but can be furnished in flat sheets when required. As a general rule wire fabric in rolls can be more easily handled and installed.

All widths are based on the distance center to center of the outside or selvage longitudinal wires. The maximum width of fabric depends on the spacing and size of the longitudinal wires and range from 72 inches to 126 inches.

Welded Wire Fabric combines the same high quality of material and service that has given Triangle Mesh Reinforcement its enviable reputation. When imbedded in concrete this fabric yields the maximum of its steel strength.

Standard Styles USS Electrically Welded Wire Fabric Reinforcement†

TABLE NO. 6

Showing Styles, Sizes and Spacing of Wires, Sectional Areas and Weights of the More Common Styles of Fabric Specified.

Style Number	Spacing of wires inches		Gauge number		Sect. areas Sq. in. per ft.		Weight per 100 square feet
	Longit.	Trans.	Longit.	Trans.	Longit.	Trans.	
22–1616*	2	2	16	16	.018	.018	13
22–1414*	2	2	14	14	.030	.030	21
22–1313*	2	2	13	13	.039	.039	28
22–1212*	2	2	12	12	.052	.052	37
22–1111*	2	2	11	11	.068	.068	48
22–1010	2	2	10	10	.086	.086	60
24–1414*	2	4	14	14	.030	.015	16
24–1314*	2	4	13	14	.039	.015	19
24–1212*	2	4	12	12	.052	.026	28
212–38	2	12	3	8	.280	.021	105
212–06	2	12	0	6	.443	.029	166
216–812	2	16	8	12	.124	.007	46
216–711	2	16	7	11	.148	.008	55
216–610	2	16	6	10	.174	.011	65
216–510	2	16	5	10	.202	.011	75
216–49	2	16	4	9	.239	.013	89
216–38	2	16	3	8	.280	.015	104
216–28	2	16	2	8	.325	.015	119
216–17	2	16	1	7	.377	.018	139
33–1212*	3	3	12	12	.035	.035	25
33–1111*	3	3	11	11	.046	.046	32
33–1010	3	3	10	10	.057	.057	41
33–99	3	3	9	9	.069	.069	49
33–88	3	3	8	8	.082	.082	58
316–812	3	16	8	12	.082	.007	32
316–711	3	16	7	11	.098	.009	38
316–610	3	16	6	10	.116	.011	45
316–510	3	16	5	10	.135	.011	52
316–49	3	16	4	9	.159	.013	61
316–38	3	16	3	8	.187	.015	72
316–28	3	16	2	8	.216	.015	83
316–17	3	16	1	7	.252	.018	96
316–06	3	16	0	6	.295	.022	113
44–1414*	4	4	14	14	.015	.015	11
44–1313*	4	4	13	13	.020	.020	14
44–1212*	4	4	12	12	.026	.026	19
44–1010	4	4	10	10	.043	.043	31
44–88	4	4	8	8	.062	.062	44
44–77	4	4	7	7	.074	.074	53
44–66	4	4	6	6	.087	.087	62
44–44	4	4	4	4	.120	.120	85
48–1313*	4	8	13	13	.020	.010	11
48–1212*	4	8	12	12	.026	.013	14
48–1112*	4	8	11	12	.034	.013	17
48–1012	4	8	10	12	.043	.013	20
48–912	4	8	9	12	.052	.013	23
48–812	4	8	8	12	.062	.013	27
48–711	4	8	7	11	.074	.017	33
412–1212*	4	12	12	12	.026	.009	13
412–1112*	4	12	11	12	.034	.009	16
412–1012	4	12	10	12	.043	.009	19
412–912	4	12	9	12	.052	.009	22
412–812	4	12	8	12	.062	.009	26
412–711	4	12	7	11	.074	.011	31
412–610	4	12	6	10	.087	.014	37
412–67	4	12	6	7	.087	.025	40
412–510	4	12	5	10	.101	.014	42
412–57	4	12	5	7	.101	.025	45
412–49	4	12	4	9	.120	.017	49
416–711	4	16	7	11	.074	.009	30
416–610	4	16	6	10	.087	.011	35
416–510	4	16	5	10	.101	.011	40
416–49	4	16	4	9	.120	.013	48
416–38	4	16	3	8	.140	.015	56
416–28	4	16	2	8	.162	.015	64
66–1212*	6	6	12	12	.017	.017	13
66–1010	6	6	10	10	.029	.029	21
66–99	6	6	9	9	.035	.035	25
66–88	6	6	8	8	.041	.041	30
66–77	6	6	7	7	.049	.049	36
66–66	6	6	6	6	.058	.058	42
66–55	6	6	5	5	.067	.067	49
66–46	6	6	4	6	.080	.058	50
66–44	6	6	4	4	.080	.080	58
66–33	6	6	3	3	.093	.093	68
66–22	6	6	2	2	.108	.108	78
66–11	6	6	1	1	.126	.126	91
66–00	6	6	0	0	.148	.148	107

† Other styles can be furnished on application. See table No. 8 for various sizes and spacings of wire that can be provided for specific jobs.

Rolls: Standard lengths 150, 200 and 300 ft.

Widths: Multiples of the spacing of longitudinal wires up to a maximum width which varies with the size and spacing of the longitudinals. Approximate maximums 56 to 72 in. for 2-in. spacing, 84 to 96 in. for 3 or 4-in. spacing, and 96 to 120 in. for 6-in. spacing.

Finish: Plain or galvanized.

Tensile Strength: 70,000 to 80,000 lbs. per sq. in.

Weights: All above weights are based on a width of 60 in. measured from center to center of the outside or selvage longitudinal wires.

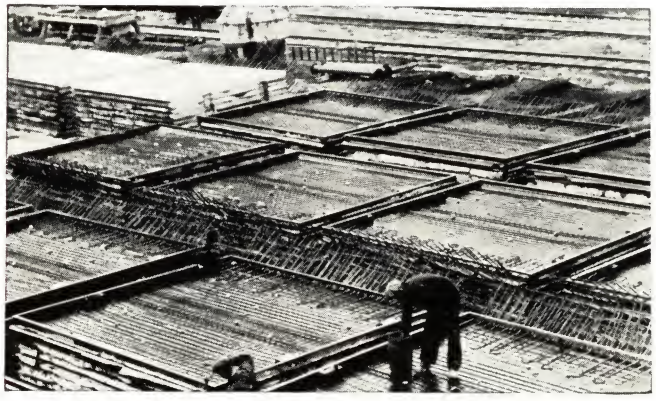
Note: Styles marked (*) can be furnished galvanized only.

How to Order USS Welded Wire Fabric

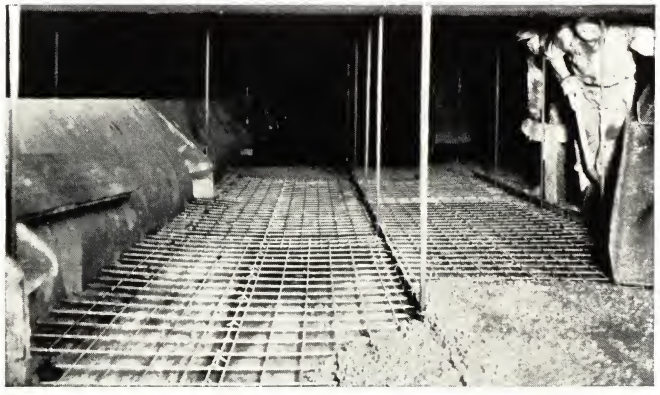
Specify the spacings of wires first, then the size or gauge. In each case mention first the longitudinals which are the wires running lengthwise of the roll or sheet.

EXAMPLE:—Assuming No. 6 gauge longitudinal wires spaced 4 inches and No. 10 gauge cross wires spaced 12 inches, the specifications should read: "USS Welded Wire Fabric 4x12 inch mesh, No. 6 x No. 10 wires."

The lengths and widths of rolls or sheets should be shown. If rolls are ordered and there is no preference as to widths or lengths, specify the total number of square feet and state any standard length and width of rolls will be satisfactory.



Welded Wire Fabric Precast Slabs, Chicago Sanitary District Sewage Disposal Plant, Stickney, Ill.



Welded Wire Fabric Reinforcing Smoke Chamber Slabs, Chicago Post Office, Chicago, Ill.

Tables for Estimating Weight of USS Electrically Welded Wire Fabric

Weights per 100 Sq. Ft. Assuming Net Width of 60 Ins. Center to Center of Outside Wires

TABLE NO. 7

American Steel & Wire Company's Steel Wire Gauge No.	Spacing of Longitudinals, in inches						Spacing of Cross Wires, in Inches						
	2	3	4	6	8	12	2	3	4	6	8	12	16
0000	256.43	173.71	132.35	90.99	69.80	49.63	256.43	170.95	128.22	85.48	64.11	42.74	32.05
000	217.31	147.21	112.16	77.11	59.14	42.06	217.31	144.87	108.66	72.44	54.33	36.22	27.16
00	181.16	122.72	93.54	64.28	49.31	35.06	181.16	120.78	90.58	60.39	45.29	30.19	22.65
0	155.37	105.25	80.19	55.13	42.29	30.07	155.37	103.58	77.69	51.79	38.84	25.90	19.42
1	132.43	89.71	68.35	46.99	36.05	25.63	132.43	88.29	66.22	44.14	33.11	22.07	16.55
2	113.96	77.20	58.82	40.44	31.02	22.06	113.96	75.97	56.99	37.99	28.49	18.99	14.24
3	98.21	66.53	50.69	34.85	26.73	19.01	98.21	65.47	49.10	32.74	24.55	16.37	12.28
4	83.95	56.87	43.33	29.79	22.85	16.25	83.95	55.97	41.97	27.98	20.99	13.99	10.49
5	70.87	48.01	36.58	25.15	19.29	13.72	70.87	47.24	35.43	23.62	17.72	11.81	8.86
6	60.96	41.29	31.46	21.63	16.59	11.80	60.96	40.64	30.48	20.32	15.24	10.16	7.62
7	51.81	35.10	26.74	18.38	14.10	10.03	51.81	34.54	25.90	17.27	12.95	8.63	6.48
8	43.40	29.40	22.40	15.40	11.81	8.40	43.40	28.93	21.70	14.47	10.85	7.23	5.43
9	36.37	24.64	18.77	12.91	9.90	7.04	36.37	24.25	18.18	12.12	9.09	6.06	4.55
10	30.14	20.42	15.56	10.69	8.20	5.83	30.14	20.09	15.07	10.05	7.53	5.02	3.77
11	24.01	16.27	12.39	8.52	6.54	4.65	24.01	16.01	12.01	8.00	6.00	4.00	3.00
12	18.41	12.47	9.50	6.53	5.01	3.56	18.41	12.27	9.20	6.14	4.60	3.07	2.30
13	13.84	9.38	7.15	4.91	3.77	2.68	13.84	9.23	6.92	4.61	3.46	2.31	1.73
14	10.58	7.17	5.46	3.76	2.88	2.05	10.58	7.06	5.29	3.53	2.65	1.76	1.32
16	6.46	4.38	3.33	2.29	1.77	1.25	6.45	4.31	3.23	2.15	1.62	1.08	0.81

The above weights are based on width of 60 inches measured from center to center of the outside or selvage longitudinal wires.
The weight of the cross or transverse wires includes the 1-in. projection or overhang beyond the outside longitudinal wires.

Note: To determine the weight of any type add the weights of the longitudinal and transverse members, adjust the total to the nearest lb., considering 0.5 lb. or over to be 1 lb., and less than 0.5 lb. to be zero.

Sectional Areas of USS Electrically Welded Wire Fabric . . . Area in Square Inches per Foot of Width for various Spacing of Wires

TABLE NO. 8

American Steel & Wire Company's Steel Wire Gauge No.	Wire		Center to center spacing, in inches											
	Diam. Inches	Area Sq. Ins.	2	3	4	5	6	7	8	9	10	12	14	16
0000	.3938	.12180	.731	.487	.365	....	.244	....	.183	....	....	.122	....	....
000	.3625	.10321	.619	.413	.310	....	.206	....	.155	....	....	.103	....	....
00	.3310	.086049	.516	.344	.258	....	.172	....	.129	....	....	.086	....	....
0	.3065	.073782	.443	.295	.221	.177	.148	.126	.111	.098	.089	.074	.063	.055
1	.2830	.062902	.377	.252	.189	.151	.126	.108	.094	.084	.075	.063	.054	.047
2	.2625	.054119	.325	.216	.162	.130	.108	.093	.081	.072	.065	.054	.046	.041
3	.2437	.046645	.280	.187	.140	.112	.093	.080	.070	.062	.056	.047	.040	.035
4	.2253	.039867	.239	.159	.120	.096	.080	.068	.060	.053	.048	.040	.034	.030
5	.2070	.033654	.202	.135	.101	.081	.067	.058	.050	.045	.040	.034	.029	.025
6	.1920	.028953	.174	.116	.087	.069	.058	.050	.043	.039	.035	.029	.025	.022
7	.1770	.024606	.148	.098	.074	.059	.049	.042	.037	.033	.030	.025	.021	.018
8	.1620	.020612	.124	.082	.062	.049	.041	.035	.031	.027	.025	.021	.018	.015
9	.1483	.017273	.104	.069	.052	.041	.035	.030	.026	.023	.021	.017	.015	.013
10	.1350	.014314	.086	.057	.043	.034	.029	.025	.021	.019	.017	.014	.012	.011
11	.1205	.011404	.068	.046	.034	.027	.023	.020	.017	.015	.014	.011	.010	.009
12	.1055	.0087417	.052	.035	.026	.021	.017	.015	.013	.012	.010	.009	.007	.007
13	.0915	.0065755	.039	.026	.020	.016	.013	.011	.010	.009	.008	.007	.006	.005
14	.0800	.0050266	.030	.020	.015	.012	.010	.009	.008	.007	.006	.005	.004	.004
16	.0625	.0030680	.018	.012	.009	....	.006	.005	....	.004	....	.003	....	.002

SUGGESTIONS FOR USE OF WIRE FABRIC REINFORCEMENT IN BUILDINGS

Basement Floor Slabs

All basement floor slabs should be reinforced with wire fabric reinforcement. The style of wire fabric depends upon the thickness of slab used and condition of the supporting soil. For small residences and apartment buildings Style 032 Triangle Mesh or a 6x6-in. mesh No. 10 and No. 10-gauge welded fabric is commonly used. For slabs laid over filled land Style 080 Triangle Mesh or a 6x6-in. mesh No. 6 and No. 6-gauge welded fabric is often used. The U. S. Government Engineers specify 6x6-in. mesh No. 6 and No. 6-gauge welded fabric to reinforce basement floor slabs on slum clearance projects.

Sidewalks, Garage Driveways and Alleys

Almost all buildings constructed in the city or suburban areas have cement sidewalks on the property, and many will require cement driveways and alleys. In practically all cases the concrete slabs should be reinforced with wire fabric. Wire fabric will hold together all cracks that may form, thereby increasing the life of the concrete slab. The usual style of fabric specified for sidewalks is Style 032 Triangle Mesh or a 6x6-in. mesh all No. 10-gauge welded wire fabric. For driveways and alleys Style 080 Triangle Mesh or 6x6-in. mesh No. 6 and No. 6-gauge welded wire fabric should be used.

Concrete Floor Filling

When concrete is used as a floor filling over concrete slabs, tile arches, metal deck floors, etc., a wire fabric is usually used as shrinkage fabric. The U. S. Government engineers specify a 4x4-in. mesh all No. 13-gauge wire fabric for shrinkage fabric in concrete floor fill.

SUGGESTIONS FOR USE OF WIRE FABRIC REINFORCEMENT IN BUILDINGS—Cont'd

Pan Joist, Tile Joist Construction

Wire fabric is commonly specified as shrinkage fabric with this type of construction. The usual fabric specified as a minimum shrinkage requirement is a 4x12-in. mesh No. 10 and No. 12-gauge wires.

Beam Slab Construction

Wire fabric, when used in this type of construction, can be designed in accordance with usual design formulas for reinforced concrete construction. A working stress of 30,000 lbs. per square inch (which is at least one-half the yield point of the material) is recommended. This is in accordance with the latest tests made on this material at the University of Delaware.

It is also the stress recommended for one way slabs by Committee 501 of the American Concrete Institute in their Report on a Standard Building Code adopted as a Tentative Standard in February, 1936.

Previous tests and data indicate that a much higher stress than this may be safely employed with the usual design formulas for spans up to 8 ft., having a minimum slab thickness of 4 inches.

Fireproof Columns, Beams Encased in Concrete

Cold drawn steel wire fabric is used to wrap columns and beams encased in concrete. A 4x4-in. mesh all No. 13-gauge welded fabric or style 032 Triangle Mesh is the usual style of fabric employed.

Concrete Walls

Welded Wire Fabric can be economically used as reinforcement in concrete walls. The area of steel required will, of course, depend upon the stress produced in the wall due to design conditions. The proposed Building Regulations for Reinforced Concrete of the American Concrete Institute, adopted as a tentative Standard February, 1936, Sec. 122 (i) requires—"Monolithic Walls shall be reinforced with an area of steel in each direction both vertical and horizontal, at least equal to 0.0025 times the cross-sectional area of the wall if of bar and 0.0018 times the area if of Electrically Welded Wire Fabric. The wire of the welded fabric shall be of not less than No. 10-gauge. Walls more than eight inches in thickness shall have the reinforcement for each direction placed in two layers parallel with the faces of the wall . . . ."

Details of Wire Fabric in 6-in. Concrete Wall Construction. Used in Chicago Post Office, Chicago, Ill.

SLAB REINFORCEMENT

Showing style of wire fabric for different floor loadings for spans up to 8 ft. in accordance with the empirical formula adopted in the New York City Building Code

STANDARD STYLES USS WIRE FABRIC REQUIRED FOR VARIOUS LOADS

Total Load per Sq. Ft. Including Weight of Slab		Span																
		4′ 0″	4′ 3″	4′ 6″	4′ 9″	5′ 0″	5′ 3″	5′ 6″	5′ 9″	6′ 0″	6′ 3″	6′ 6″	6′ 9″	7′ 0″	7′ 3″	7′ 6″	7′ 9″	8′ 0″
USS Electric Welded Reinforcement—4-in. Cinder Concrete Slabs, 1-2-5 Mixture																		
100 lb..	Wire spacing in..	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 16	4 x 16	3 x 12	3 x 12
	Gauge wire....	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	9 & 12	9 & 12	8 & 12	8 & 12	7 & 11	7 & 11	8 & 12	8 & 12
125 lb..	Wire spacing in..	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 16	4 x 16	3 x 12	3 x 12	4 x 16	3 x 16
	Gauge wire....	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	9 & 12	9 & 12	8 & 12	8 & 12	7 & 11	7 & 11	8 & 12	8 & 12	6 & 10	7 & 11	5 & 10
150 lb..	Wire spacing in..	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 16	4 x 16	3 x 12	4 x 16	3 x 16	4 x 16	3 x 16	4 x 16
	Gauge wire....	10 & 12	10 & 12	10 & 12	10 & 12	9 & 12	9 & 12	8 & 12	8 & 12	7 & 11	7 & 11	8 & 12	6 & 10	7 & 11	5 & 10	6 & 10	6 & 10	4 & 9
175 lb..	Wire spacing in..	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 16	4 x 16	3 x 12	4 x 16	3 x 16	4 x 16	3 x 16	3 x 16	3 x 16	4 x 16
	Gauge wire....	10 & 12	10 & 12	10 & 12	9 & 12	8 & 12	8 & 12	7 & 11	7 & 11	8 & 12	6 & 10	7 & 11	5 & 10	6 & 10	6 & 10	6 & 10	5 & 10	5 & 10
200 lb..	Wire spacing in..	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 16	3 x 12	4 x 16	3 x 16	4 x 16	3 x 16	4 x 16	3 x 16	3 x 16	3 x 16	2 x 16	3 x 16
	Gauge wire....	10 & 12	9 & 12	9 & 12	8 & 12	8 & 12	7 & 11	8 & 12	6 & 10	7 & 11	5 & 10	6 & 10	6 & 10	5 & 10	5 & 10	7 & 11	4 & 9	4 & 9
225 lb..	Wire spacing in..	4 x 12	4 x 12	4 x 12	4 x 12	4 x 16	3 x 12	4 x 16	3 x 16	4 x 16	3 x 16	4 x 16	3 x 16	4 x 16	3 x 16	3 x 16	3 x 16	2 x 16
	Gauge wire....	9 & 12	9 & 12	8 & 12	8 & 12	7 & 11	8 & 12	6 & 10	7 & 11	5 & 10	6 & 10	4 & 9	5 & 10	3 & 8	4 & 9	4 & 9	6 & 10	3 & 8
250 lb..	Wire spacing in..	4 x 12	4 x 12	4 x 12	4 x 16	4 x 16	4 x 16	3 x 16	4 x 16	3 x 16	3 x 16	3 x 16	2 x 16	3 x 16	2 x 16	3 x 16	3 x 16	2 x 16
	Gauge wire....	9 & 12	8 & 12	8 & 12	7 & 11	6 & 10	6 & 10	7 & 11	5 & 10	6 & 10	5 & 10	5 & 10	4 & 9	3 & 8	3 & 8	4 & 9	5 & 10	3 & 8
275 lb..	Wire spacing in..	4 x 12	4 x 12	4 x 16	4 x 16	4 x 16	3 x 16	3 x 16	3 x 16	3 x 16	3 x 16	3 x 16	2 x 16	3 x 16	2 x 16	3 x 16	2 x 16	2 x 16
	Gauge wire....	8 & 12	8 & 12	7 & 11	6 & 10	6 & 10	7 & 11	6 & 10	6 & 10	5 & 10	5 & 10	4 & 9	4 & 9	3 & 8	3 & 8	4 & 9	4 & 9	2 & 8
300 lb..	Wire spacing in..	4 x 12	4 x 16	4 x 16	4 x 16	3 x 16	4 x 16	3 x 16	3 x 16	4 x 16	2 x 16	3 x 16	2 x 16	3 x 16	2 x 16	2 x 16	2 x 16	2 x 16
	Gauge wire....	8 & 12	7 & 11	7 & 11	6 & 10	7 & 11	5 & 10	6 & 10	5 & 10	5 & 10	3 & 8	4 & 9	3 & 8	4 & 9	3 & 8	4 & 9	4 & 9	2 & 8
325 lb..	Wire spacing in..	4 x 16	4 x 16	4 x 16	3 x 16	4 x 16	3 x 16	3 x 16	4 x 16	2 x 16	3 x 16	2 x 16	3 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16
	Gauge wire....	7 & 11	7 & 11	6 & 10	7 & 11	5 & 10	6 & 10	5 & 10	3 & 8	7 & 11	4 & 9	6 & 10	3 & 8	5 & 10	4 & 9	4 & 9	3 & 8	3 & 8
350 lb..	Wire spacing in..	4 x 16	3 x 12	4 x 16	4 x 16	3 x 16	4 x 16	3 x 16	2 x 16	3 x 16	2 x 16	3 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16
	Gauge wire....	7 & 11	8 & 12	6 & 10	5 & 10	6 & 10	4 & 9	5 & 10	7 & 11	4 & 9	6 & 10	3 & 8	5 & 10	4 & 9	4 & 9	3 & 8	3 & 8	3 & 8
375 lb..	Wire spacing in..	4 x 16	4 x 16	3 x 16	3 x 16	4 x 16	3 x 16	2 x 16	3 x 16	2 x 16	3 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16
	Gauge wire....	7 & 11	6 & 10	7 & 11	6 & 10	4 & 9	5 & 10	7 & 11	4 & 9	6 & 10	3 & 8	5 & 10	4 & 9	4 & 9	3 & 8	3 & 8	3 & 8	2 & 8
400 lb..	Wire spacing in..	3 x 12	3 x 16	4 x 16	3 x 16	3 x 16	4 x 16	3 x 16	2 x 16	3 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16
	Gauge wire....	8 & 12	7 & 11	5 & 10	6 & 10	5 & 10	3 & 8	4 & 9	6 & 10	3 & 8	5 & 10	4 & 9	3 & 8	3 & 8	3 & 8	3 & 8	2 & 8	2 & 8
425 lb..	Wire spacing in..	4 x 16	3 x 16	4 x 16	4 x 16	3 x 16	3 x 16	3 x 16	3 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16
	Gauge wire....	6 & 10	7 & 11	4 & 9	5 & 10	4 & 9	4 & 9	3 & 8	5 & 10	4 & 9	4 & 9	3 & 8	3 & 8	3 & 8	2 & 8	2 & 8	2 & 8	1 & 7
450 lb..	Wire spacing in..	3 x 16	4 x 16	4 x 16	3 x 16	2 x 16	3 x 16	2 x 16	3 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16	2 x 16
	Gauge wire....	7 & 11	5 & 10	4 & 9	5 & 10	7 & 11	4 & 9	6 & 10	3 & 8	4 & 9	4 & 9	4 & 9	3 & 8	3 & 8	2 & 8	2 & 8	1 & 7	1 & 7

USS Triangle Mesh Reinforcement—4-in. Cinder Concrete Slabs, 1-2-5 Mixture

100 lb.	053P	053P	053P	053P	053P	053P	053P	053P	053P	062P	062P	072P	072P	084P	084P	084P	097P
125 lb.	053P	053P	053P	053P	053P	053P	062P	062P	072P	072P	084P	084P	097P	097P	097P	107	107
150 lb.	053P	053P	053P	053P	062P	062P	072P	072P	084P	084P	097P	097P	107	107	126	126	126
175 lb.	053P	053P	053P	062P	072P	072P	084P	084P	097P	097P	107	107	126	126	146	146	146
200 lb.	053P	062P	062P	072P	072P	084P	084P	097P	107	107	126	126	146	146	153	168	168
225 lb.	062P	062P	072P	072P	084P	097P	097P	107	107	126	126	146	146	153	168	180	208
250 lb.	062P	072P	072P	084P	097P	097P	107	126	126	146	146	153	168	180	180	208	208
275 lb.	072P	072P	084P	097P	097P	107	126	126	146	146	153	168	180	208	208	245	245
300 lb.	072P	084P	084P	097P	107	126	126	146	146	153	168	180	208	208	245	245	267
325 lb.	084P	084P	097P	107	107	126	146	146	153	168	180	208	208	245	245	267	287
350 lb.	084P	097P	097P	107	126	126	146	153	168	180	208	208	245	245	267	287	287
375 lb.	084P	097P	107	126	126	146	153	168	180	208	208	245	245	267	287	309	309
400 lb.	097P	107	107	126	146	146	168	180	208	208	245	245	267	287	287	309	336
425 lb.	097P	107	126	126	146	153	168	208	208	245	245	267	267	287	309	336	365
450 lb.	107	107	126	146	153	168	180	208	245	245	245	267	287	309	336	365	395

ELECTRIC WELD GALVANIZED WIRE FABRIC FOR PLASTER AND STUCCO REINFORCEMENT

Description and Uses

Perfected Plaster-Stucco Reinforcement, Styles PS—14 and PS-16—A combined wire lath and reinforcement for interior and exterior work. Wire lath and paper back are one unit. Shipped in crates of perfectly flat sheets (one man size), 34x52 in.

51 sheets of fabric are packed in a crate approximately 70 sq. yds. Sufficient galvanized or blued hook head nails for proper application of the fabric are supplied with each crate.

Fabric extends beyond paper to allow proper lapping of adjacent sheets. Stiffener wires are welded through holes in the paper to face fabric. These holes also provide enough ventilation to properly cure the new plaster. No. 14 gauge is used for outside stucco reinforcement and No. 16 gauge for inside plaster reinforcement.

Uses—The PS-14 fabric is used extensively for reinforcing cement or gypsum stucco on new buildings, or for overcoating old wood, brick or stone structures.

Style PS-16 is used for inside plaster work.

Paper Back—Heavy kraft paper for inside use. 2-ply waterproofed paper for exteriors or for use with termite treated lumber.

Advantages

PS-14 and PS-16 provide a positive reinforcement of the stucco or plaster. The 2x2-in. square mesh openings are of sufficient size to allow the stucco or plaster to be pushed through and to completely embed the galvanized wire. Galvanized steel prevents rusting thereby providing a lasting construction of low first and installation costs. Paper backing, in addition to preventing loss of the expensive plaster material by acting as a form for the plastic stucco or plaster, also prevents joist and lath marks on the finished plaster wall.

The economy of paper back galvanized wire fabric lies in its efficiency, low first cost, low installation cost and long life.

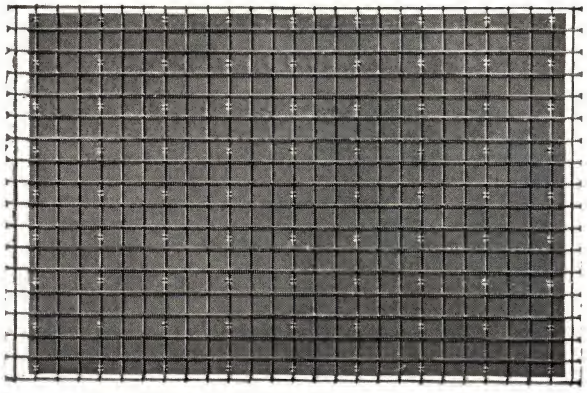
Application

Styles PS-14 and PS-16 (Paper Back) can be applied directly to the studs or to the sheathing or other backing. Use hook head nails supplied with each crate of fabric. The paper back fabric should extend around the corners and the back stiffener wires should span the studding. Self-furring stucco nails may also be used with this fabric if desired.

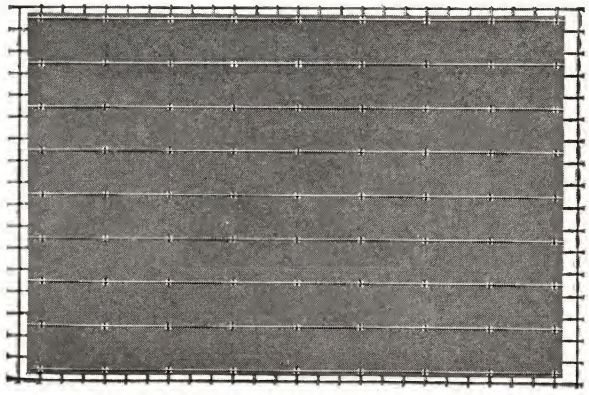
PERFECTED PLASTER-STUCCO REINFORCEMENT (PAPER BACK)

Style No.	Wires, face fabric		Back wires		Net weight, lb. per sq. yd.	Gross wt., lb. per sq. yd.
	Gauge No.	Spacing, in.	Gauge No.	Spacing, in.		
PS-14	14	2 x 2	13	4	3.0	3.5
PS-16	16	2 x 2	13	4	2.3	2.8

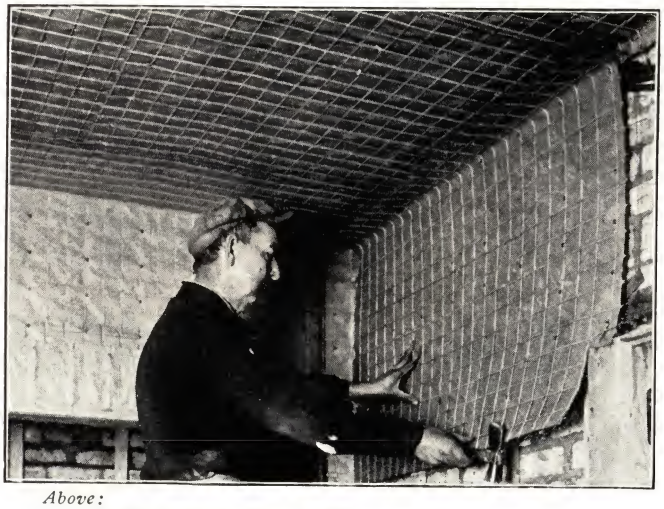
Note: Gross weight per sq. yd. includes weight of crate and nails.



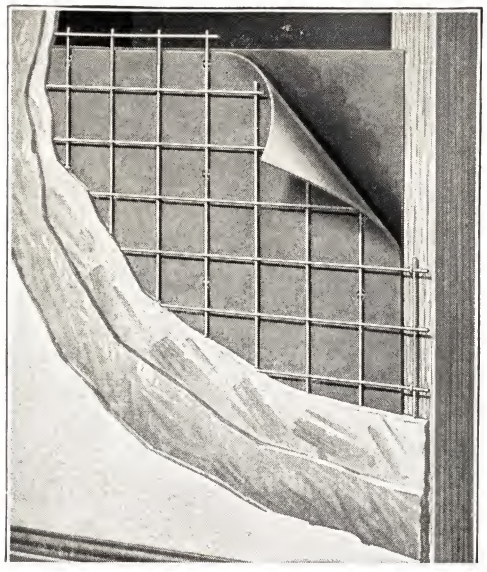
Front View of PS-16 for Inside Plaster Work
Note holes in paper necessary to provide ventilation to properly cure the new plaster



Back View of PS-16 for Inside Plaster Work Showing Stiffener Wires
Note overhang of fabric beyond paper for proper lapping at sides and ends of sheets



Above:
PS-16 Fits Easily Around Window and Door Openings



At right:
Style PS-14 Self Furring Paper Back Fabric with 2-ply Waterproof Paper Backing for Stucco

AMERICAN STEEL & WIRE COMPANY

UNITED STATES STEEL